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University of Arizona
COLLEGE OF AGRICULTURE
AGRICULTURAL EXTENSION SERVICE

HOME PRESERVATION OF FOOD

PRESERVATION OF VEGETABLES, FRUITS, AND MEATS

By
Frances L. Brown
and
Olive G. Picard

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P. H. Ross, *Director*

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HOME PRESERVATION OF FOOD

PRESERVATION OF VEGETABLES, FRUITS, AND MEATS

By

Frances L. Brown and Olive G. Picard

INTRODUCTION

Rural homemakers everywhere are convinced of the nutritional and economic value to the family dietary of home canned food products. Canned food approximates the natural flavor of the fresh product and is quickly and easily served. For this reason canning has become the popular home method of food preservation.

For the rural family, ordinarily the most inexpensive foods are those produced on the farm. Fresh out-of-season products may be purchased at markets but are apt to be prohibitive in price, and the distances to these market centers may be too great to make the purchasing of fresh food products feasible at all seasons of the year.

In the last decade major emphasis has been placed on the nutritional value of fruits and vegetables, and the rural homemakers, with an increasing knowledge of these dietary facts, appreciate as never before the necessity of including them daily in the diet. To insure an adequate daily supply of these essential nutrients throughout the entire year, surplus products raised on the farm should be canned. It is poor management, however, to reduce the amount of fresh products served to one's family in order to have a surplus for canning, but it is possible with careful forethought to plan to raise enough fruits and vegetables both for immediate consumption and for preservation.

The canning of meats and poultry in rural homes, while a comparatively new accomplishment, is fast being recognized as an economic way of insuring a supply of these products the year around. Heretofore, some farm families, from necessity, have served an overabundance of fresh beef and pork during the cold months and have had very little fresh meat, other than poultry, during the remaining months. While this practice was perhaps unavoidable, it was poor economy when health was considered.

In planning a food preservation program, the homemaker should take into consideration the possibilities of preserving methods other than canning. It does require time and energy to can products which might be stored safely in pits and cellars. Beets, carrots, cabbage, parsnips, onions, and pumpkins can be stored for the winter months in some parts of Arizona, while in other

parts it is possible to raise these vegetables in a fall or winter garden and thus have them fresh. It must not be forgotten that such vegetables cannot be kept at just the most desirable stage of development either in the ground or in storage. Changes in the actual makeup towards maturity are bound to take place. Carrots, for instance, have a much more delicate flavor when young and tender than when more mature, whether left in the ground or placed in storage. Therefore, canning these vegetables when they are at the most desirable point in growth offers the best method of preserving them for future consumption.

Drying and curing and preserving with sugar or vinegar and spices are other methods that should be taken into consideration when planning the year's food supply. Certain fruits, vegetables, and meats may be successfully dried or cured with a possible saving to the homemaker of time and money, and these methods offer variety as well.

THE CANNING BUDGET

Often it becomes a problem to meet the nutrition requirements of the family the year around. Therefore, it is necessary to know these requirements, carefully budget the canning, and can to fulfill these requirements. To have these nutritional requirements, it is necessary to provide the following: two servings of vegetables daily (besides potato), one of these a raw or leafy vegetable or canned tomatoes; two servings of fruit daily (fresh, canned, or dried); one quart of milk (children), one pint (adults) daily; whole-grain cereals three times or more a week; meat or meat substitutes (eggs, cheese, fish, dried beans, or peas) daily (children one egg daily, adults two or three a week); fat (butter, cream, etc.) daily; four to eight glasses of water daily.

Canning is the sterilization and sealing of food products into airtight containers. Budget is a stock or a store, as defined by Webster. Therefore, a canning budget is the amount of canned foods needed to supply a family during those months when such foods cannot be procured in the fresh state. It is presupposed that canned foods will be supplemented by fresh and dried products. A canning budget is made to avoid an under- or an oversupply of canned goods. Some products deteriorate in color and flavor upon standing and hence mean lost work.

The following canning budget allows for one canned vegetable a day. A stored vegetable or an occasional fresh one may provide the second vegetable, thus meeting the ideal of two servings for each person daily. Likewise, one serving of canned fruit per day has been planned, which may be supplemented by an additional serving of fresh or stored fruit.

The word serving for fruits and vegetables means at least ½ cup, and as much more as seems necessary to satisfy the appetite.

APPROXIMATE CANNING BUDGET FOR ONE PERSON FOR ONE WEEK

Products	Use	Amount to can
Greens	Two times a week	½ pint to last one week
Tomatoes	Two times a week	½ pint to last one week
Other vegetables	Three times a week	¾ pint to last one week
Fruits (canned)	Seven times a week	1¾ pint to last one week
Juices (tomato, fruit, kraut)	Three times a week	¾ pint to last one week
Jams, jellies, marmalades	Three times a week	½ pint to last one week
Pickles and relishes	Three times a week	½ pint to last one week
Dried fruits	Two times a week	½ pint to last one week
Meat	Two or three times a week	¾ pint to last one week

The above amounts should be multiplied by the number in the family and then by the number of weeks to be provided for in order to get the full amount needed, as in the following table:

CANNING BUDGET FOR FAMILY OF SIX

Products	Use	Amount to can
Greens	Two times a week	18 quarts for three months
Tomatoes	Two times a week	64 quarts for eight months
Cabbage — Kraut	Three times a week	18 quarts for three months
Corn, asparagus, beans, peas, okra, soup mixture, beets, carrots (select from group)	Seven times a week	48 quarts for seven months
Berries, cherries, peaches, plums, pears, rhubarb, apricots (select from group)	Seven times a week	144 quarts for six months
Fruit, tomato, or kraut juice	Three times a week	9 quarts for six months
Jellies, jam, marmalades	Three times a week	36 quarts for ten months
Pickles and relishes	Three times a week	36 quarts for ten months
Dried fruits	Two times a week	36 pounds for ten months

(Table taken from *Home Canning in Maryland*, Bulletin No. 55.)

CANNING BUDGET FOR A BABY

A small quantity of green-vegetable pulp (spinach, peas, carrots, asparagus) and tomato juice should be added to the baby's daily diet as they provide additional minerals, particularly iron and vitamins A, B, and G. In order to provide these necessary foods the year around the mother must either take these vegetables from the family's supply of canned goods and run them through a sieve or can small quantities of these strained vegetables especially for the baby. The following budget for the first and second year is suggested. The amounts and increase in

amounts should be given under the direction of a physician or as directed by some reliable book or bulletin on infant feeding.

First Year*	Second Year*
Fifty ½ pints tomato juice (strained)	Sixty ½ pints tomato juice
Twenty ½ pints carrots (one half pulp and one half liquor)	Forty ½ pints carrots (strained pulp)
Ten ½ pints spinach (one half pulp and one half liquor)	Thirty ½ pints spinach (strained pulp)
Five ½ pints peas (one half pulp and one half liquor)	Ten ½ pints peas (strained pulp)
Five ½ pints asparagus (one half pulp and one half liquor)	Ten ½ pints asparagus (strained pulp)

*From University of Maryland Extension Bulletin No. 55 (Revised).

Note: The vegetables should be cooked until soft, rubbed through the sieve, and canned with an equal amount of the water in which the vegetables were cooked. They should be processed the same as in other canning—that is, in a pressure cooker if they are the nonacid vegetables.

The following table giving the approximate amounts of food should be helpful to one who is planning a canning budget:

APPROXIMATE AMOUNTS OF FOODS TO AID IN PLANNING THE CANNING BUDGET*

Product	Amount of fresh product needed to can 1 qt.	No. servings in 1 qt. can	No. servings in 1 pound of fresh	No. pounds of fresh in 1 bushel	No. qts. canned to 1 bushel
Greens	3 lbs.	8	3	12 lbs.	4
Tomatoes	3 lbs.	8	4 tomatoes	60 lbs.	18
Lettuce			¼ head or 1 leaf		
Cabbage	2½ lbs.	8	7 raw or 4 cooked		
Beans (string)	2 lbs.	8	4	28 lbs.	12
Beans (Lima)	4 qts. in hull	8	4 shelled	28 lbs.	10
Peas	4 qts. in hull	8	4 shelled	28 lbs.	7
Corn	8 small ears or 2 lbs.	8	1 ear		
Okra	2 lbs.	8	4		
Asparagus	2 (2-lb. bunches)	8	4	40 lbs.	
Squash	4 lbs.	8	4	40 lbs.	10
Cucumbers	4 lbs.		1 cucumber		
Beets	2½ lbs.	8	4	60 lbs.	20
Carrots	2½ lbs.		4	60 lbs.	20
Onions			4		
Parsnips			4		

APPROXIMATE AMOUNTS OF FOODS TO AID IN PLANNING THE CANNING BUDGET*—*Continued*

Product	Amount of fresh product needed to can 1 qt.	No. servings in 1 qt. can	No. servings in 1 pound of fresh	No. pounds of fresh in 1 bushel	No. qts. canned to 1 bushel
Turnips			4		
Potatoes (Irish)			3		
Potatoes (sweet)			3		
Berries	1½ qts.				
Cherries	1½ qts.				
Peaches				60 lbs.	25
Pears				50 lbs.	30
Apples				50 lbs.	25
Dried peaches apples, etc.				50 lbs.	5 lbs. dried

**Home Canning in Maryland*—University of Maryland Bulletin No. 55.

Note: The above figures are approximate only.

NECESSARY EQUIPMENT FOR CANNING

Proper equipment in good condition is necessary for the best results in canning. Household equipment should include containers as well as utensils for preparation of foods, precooking, processing by means of different methods, packing of foods in the containers, and sealing.

Containers

1. Glass jars: Glass jars are more universally used for home canning than other containers. There is a wide variety of shapes and sizes on the market from which the home canner may select those suitable for her individual needs. She should keep in mind the following points when making her selection:
   a. They should be easily cleaned and sterilized.
   b. They should be suitable in size for the family and for the product which is to be canned.
   c. They should be without defects that would interfere with a perfect seal.
   d. They should be of a convenient and economical size for the processing unit.
2. Lids: There are three well-known types of glass jars, each one easily recognized by the lid or top used. They are the screw

top, the spring-type, and the lacquered metal or automatic seal top. Lids for the lacquered or automatic seal top must be replaced every year in order to insure a perfect seal. The screw top lids may be used repeatedly but they should be examined each time for bent edges, imperfect threads, and cracked porcelain linings. Glass tops are easily cleaned and sterilized but are also easily chipped or cracked. They should be carefully examined for these defects before using.

3. Rubber rings: Good quality rings should be purchased every year. They should be tested for quality as follows:
   a. The ring should be stretched to twice the diameter. If it immediately returns to its original size on being released it may be used.
   b. The ring should be bent together and pressed down firmly. If it springs back quickly and shows no signs of cracking it may be considered suitable for use.
4. Tin containers: Tin cans are being used more and more for home canning. They are desirable for use because they allow heat to penetrate quickly, are easy to handle without danger of breakage, are quickly cooled by immersion in cold water after processing, the first cost is reasonable, and if they are taken care of they may be used more than once.
   a. Types of tin cans—the following kinds are available on the market:
      (1) Plain.
      (2) C-enamel (dull gold enamel). Used for canning corn, fish, and meats.
      (3) R-enamel (bright gold enamel). Used for canning highly colored fruits (cherries, raspberries, strawberries) and vegetables (beets, carrots). These cans are not necessary from a health standpoint but they add to the attractiveness of the products as they help to retain the natural color.

Tin Can Sealer

This is a special device for sealing and opening tin cans. It is made adjustable so as to seal different sized cans.

Water Bath Equipment

1. A wash boiler, lard can, or similar large container which has a firmly fitted lid.
2. Rack or false bottom.
3. A jar lifter. Tongs or heavy wire may be used for placing and removing jars from the hot water bath.

Pressure Cooker

The steam pressure cooker or canner is a large aluminum vessel capable of holding steam under pressure, fitted with a petcock, safety valve, and steam gauge which registers the pounds pressure. This cooker is highly recommended for canning, particularly for meats and nonacid vegetables, because of the higher temperatures which are possible with its use.

Other Equipment

1. Large vessel for precooking.
2. Large vessel for cold water dipping.
3. Fruit funnel.
4. Measuring cup.
5. Stainless steel knives, spoons, wooden paddles (for use in packing food into jars).
6. Wire basket.
7. Cloth bag (cheesecloth).

PREPARATION OF EQUIPMENT

1. All canning equipment should be examined and put in good condition at the beginning of the canning season.
2. Utensils for the different canning operations should be grouped into convenient units. This will save considerable time and fatigue.
3. The operator should make a careful selection of containers. Those appropriate for quantity needed for family and for size of product to be canned should be chosen.
4. Jars or cans should be carefully examined for imperfections such as cracked, broken lids, loose clasps, or rough, bent edges.
5. Broken porcelain or glass linings of metal caps or tops with faulty gaskets should be replaced with new ones.
6. Jars should be tested for leakage by filling partially with water and inverting.
7. The pressure cooker should be carefully examined for cleanliness and accuracy of pressure. The safety valve and petcock should be particularly examined for cleanliness. Pressure cookers and all other equipment should be thoroughly cleaned after each operation then very little time would be consumed in getting them ready for the season's canning.

THE IMPORTANCE OF USING SAFE METHODS OF PRESERVATION

If proper precautions are taken by the housewife, home canning may be considered just as safe as commercial canning. However, certain dangers must be recognized and guarded against.

Yeast, molds, and bacteria are the three types of organisms causing food spoilage.

Yeast and molds are easily destroyed by short applications of heat.

Bacteria when in the spore stage are heat resistant.

Clostridium botulinum or *Bacillus botulinus*, found in certain soils, offers great resistance to heat particularly when in a nonacid medium, and a temperature far above boiling is required to destroy it. Botulism, a food poisoning produced by the toxin from these bacteria, is deadly. To guard against botulism the steam pressure cooker should be used for the canning of all nonacid foods (meat, fish, poultry) and all vegetables except tomatoes and

ripe pimientos. *This is the only method recommended as safe for these products.*

Harmful canning powders should not be used as an aid in preservation. There are two types of preservations: (1) harmless—vinegar, sugar, salt, spices and (2) harmful—formaldehyde, sulphites, borates, alum, salicylates.

CANNING OF FRUITS AND ACID VEGETABLES

Steps necessary in canning fruits, tomatoes, and ripe pimientos:

1. Fresh fruits of uniform ripeness should be selected. Bruised, overripe fruits should be made into preserves or jams. Overripe fruits cook to pieces, making the liquid cloudy.
2. If an attractive pack is desired, fruits should be carefully graded as to size and color.
3. All fruits should be thoroughly washed before being prepared for canning. A wire basket is useful for this purpose. Soft fruits such as strawberries, raspberries, and cherries should be carefully handled during the cleaning process. They should be placed in a sieve before the stems are removed and held under a faucet. If washed in still water, the fruits should be lifted from the water instead of the water being poured off.
4. The jars should be sterilized while the fruit is being prepared for canning. This should be done by placing them in cold water, closely covered, allowing water to come to a boil and boiling for fifteen minutes. Rubbers should be placed in hot water for several minutes, and the lids of the self-sealing jars should be immersed in boiling water while the jars are being filled.
5. The fruits should be prepared (skinned, peeled, cored, pitted, cut, etc.) as quickly as possible. Only a small amount should be prepared at one time. Skins are easily removed from peaches and apricots after they have been in hot water for a few minutes.
6. Packing in the containers should be done as quickly as possible, particularly if the fruit has been precooked. Peaches and other fruits that have been halved should be packed with the pit side down and in uniform layers. If packing whole fruit such as pears, the stem end should be placed up and the fruit arranged in layers. The blossom end should be removed. The jars should then be filled with the hot sirup.
7. Air bubbles may be removed with the aid of a spatula or spoon.
8. A sirup made of sugar and water brought to the boiling point, or sugar and fruit juice, should be poured into the jar of fruit and should come to within ½ inch of the top of the jar. Honey may be substituted for half the amount of sugar if desired. The density of the sirup used varies with the sweetness of the fruit being canned. The following table gives the different types of sirups:

Character of sirup	Sugar (cups)	Water (cups)	Fruit
Thin	1	3	Sweet fruit (apples, apricots, pears, sweet cherries)
Medium	1	2	Medium sweet fruit (berries, peaches, plums, grapes)
Thick	1	1	Sour fruit (gooseberries and sour cherries)
Very thick	1	⅔	Very sour fruit (sour plums)

(From *Home Preservation of Fruits and Vegetables,* Circular No. 260, Oklahoma.)

9. If a full jar of fruit is desired it is better to precook the fruit until it is clear before putting it into the containers. Fruit packed raw and then processed tends to shrink during the processing period, resulting in a partially filled jar as the finished product.
10. Fruits may be processed successfully in the open kettle, water bath, oven steamer, or pressure cooker. If the pressure cooker is used, care must be taken not to overcook the product. It is recommended that the petcock be left open during the entire processing period which should be the same length of time as for the water bath processing. If this method is used, more water should be put into the cooker to allow for the evaporation.
11. The rubbers and lids should be placed in position and the lids partially screwed on. If tin cans are used, the fruit should be precooked, poured into the cans while boiling, and the cans sealed. The fruit should then be processed for the required length of time.
12. The jars should be removed after processing and sealed at once.

METHODS USED FOR PROCESSING ACID FRUITS, TOMATOES, AND PIMIENTOS

Open Kettle

This method may be used successfully for canning acid fruits, tomatoes, and ripe pimientos, if certain precautions are taken.

1. The product should be thoroughly cooked.
2. The jars, lids, and rings must be properly sterilized.
3. The containers must be perfectly sealed as soon as filled. If food spoils when the open kettle method is used, it might be due to yeasts and molds falling into the jars while they are being filled or sealed. When this is true, they should be processed in a water bath for five minutes after the jars are sealed to guard against spoilage.

Oven Method

This method may be used with success for acid fruits, tomatoes, and ripe pimientos. *It should not be used for nonacid vegetables and meats.*

1. The containers should be filled with raw or precooked food partially sealed and placed either directly on the rack of the oven or in a shallow pan on the rack.
2. The oven should be preheated to 275 degrees F. before the processing period begins. In order to insure a completely sterilized product, the processing time should be increased 50 per cent more than the time for the water bath method. In oven canning the product can never reach a temperature higher than boiling (212 degrees F.).

Hot Water Bath Process

This method is the one commonly used for most acid fruits, fruit juices, and tomatoes. It can be used as well as any other method for fruit that has not been precooked, but the following steps have been worked out for those that have been precooked. The processing equipment should consist of a wash boiler, lard can, or similar vessel which is equipped with a wooden rack or false bottom and a tightly fitted lid. It should be deep enough to allow the water to cover the jars at least 2 inches.

1. The fruit to be canned should be precooked in a sirup until it clears or is heated all the way through. Tomatoes are precooked in boiling water.
2. Containers should be filled with the hot cooked product. If the food has been precooked and is boiling hot, the jars may be completely filled.[1]
3. The hot sirup or liquid should be added to completely fill the jar.
4. The jars should be sealed immediately and placed on the rack and completely immersed in the boiling water.
5. When the water is boiling vigorously, the operators should begin counting the processing time.
6. The temperature of the water bath should be kept constant in order to insure a well-processed product.
7. The length of time for processing should be correct for the product being canned and also for the altitude of the particular region. The table on page 17 gives the changes to be made in the processing time for increase in altitude.

SCORE CARD FOR CANNED FRUITS

	Per cent
Pack—full, attractive, practical	20
Liquid—clean, clear, enough to cover fruits and tomatoes	10
Color—natural color, not faded or unnaturally bright	20
Quality of products—distinct, uniform pieces, well prepared, firm, keeping original shape	40
Appearance of container—clean, suitable container, clear glass, neat label	10
Total	100

[1] If the products are not boiling when the jar is packed and filled up, it is safer to leave ¼ to ½ inch in head space.

TIMETABLE FOR PROCESSING FRUITS, FRUIT JUICES, TOMATOES, AND PIMIENTOS*

Product	Method of treatment	Hot water, steamer, or pressure cooker (petcock open)		Pressure cooker (5 lbs. pressure) (min.)
		Glass jars pts. & qts. (min.)	Nos. 2 & 3 cans (min.)	
Apples	The fruit may be sliced, quartered, or halved, then packed into containers and covered with boiling thin sirup. Or pack hot in form of apple sauce.	15 5	10 5	8
Apricots	Same as peaches	15	15	
Blackberries Loganberries Raspberries etc.	Berries should be packed into containers, and boiling hot, medium sirup added. Or they may be precooked and packed hot.	20 5	15 5	10
Cherries	Cherries should be packed into containers and covered with boiling sirup, using thick sirup for sour cherries and medium for sweet. Or the pits may be removed, sugar added as desired, then precooked and packed.	25 5	20 5	10
Currants	Same as berries	20	15	10
Figs	One cup of soda should be sprinkled over 6 quarts of figs and a gallon of boiling water added. The figs should remain in this solution for five minutes then they should be drained and rinsed well. Two quarts of boiling medium sirup should be added to the figs. They should be boiled for one hour in this sirup, packed into containers, covered with the hot sirup and processed.	5	5	
Gooseberries	The berries should be packed into containers, adding boiling hot, thick sirup and processed. Or they may be made into sauce with sugar added as desired and packed hot into the containers.	20 5	15 5	10

TIMETABLE FOR PROCESSING FRUITS, FRUIT JUICES, TOMATOES, AND PIMIENTOS*—*Continued*

Product	Method of treatment	Hot water, steamer, or pressure cooker (petcock open)		Pressure cooker (5 lbs. pressure) (min.)
		Glass jars pts. & qts. (min.)	Nos. 2 & 3 cans (min.)	
Grapefruit	The peel and as much of the white lining as possible should be removed. The segments should be separated by clipping the ends of the membranes covering each segment with scissors and peeling off the membrane. With careful handling the pulp in each section will retain its original size and shape. This pulp may be packed directly into the jars and the jars filled with the juice that has been strained and then processed, or the sections may be put into a kettle and covered with strained juice and brought to a boil. It should be boiled gently for three minutes, then packed into jars, covered with boiling juice, and processed. If preferred, sugar, honey, or Karo sirup may be added for sweetening but since the canned fruit may be desired for salads it is not necessary. If sweetness is desired 1 cup of sugar, sirup, or honey may be used to 3 cups of juice. Honey or sugar is apt to give grapefruit a creamy color. White Karo or no sweetening leaves it uncolored and natural.	5	5	
Oranges	Same as grapefruit			
Peaches	Peaches should be scalded, dipped into cold water, then peeled and pitted. They should be cut into desired sizes and packed into containers. Medium sirup should be added. A cracked peach pit added for each quart of sirup improves the flavor of the peaches. It should be removed before canning, however.	15	15	10
Pears	The fruit should be pared, cooked from four to eight minutes in boiling sirup, and packed hot into containers with boiling medium sirup.	20	20	8

TIMETABLE FOR PROCESSING FRUITS, FRUIT JUICES, TOMATOES, AND PIMIENTOS*—*Continued*

Product	Method of treatment	Hot water, steamer, or pressure cooker (petcock open)		Pressure cooker (5 lbs. pressure) (min.)
		Glass jars pts. & qts. (min.)	Nos. 2 & 3 cans (min.)	
Plums	Plums should be pricked, packed into containers, and covered with boiling medium sirup.	20	15	10
	Or boiled with desired amount of sugar and put hot into containers.	5	5	
Rhubarb	Rhubarb may be cut in ½-inch lengths, one fourth as much sugar as rhubarb added, and baked until tender in a covered dish. It should be packed hot into the containers and processed.	5	5	5
	Or it may be packed uncooked, medium boiling sirup added, and processed.	20	15	15
Strawberries	One cup of sugar and 2 tablespoonfuls of water should be added for each quart of berries. They should be boiled slowly for fifteen minutes and left in the kettle overnight. In the morning the berries should be reheated to boiling, packed hot into the containers, and processed.	5	5	3 to 5
Fruit juices† Apple cider Grape Currant Blackberry Raspberry Cherry Peach	Method I—Fruit that is very ripe should be crushed and heated slowly until it begins to boil. It should be removed from the stove, allowed to settle, and then strained through a double cheesecloth. Sugar should be added (1 cup to 1 gal. of juice). Clean, sterilized bottles should be filled to overflowing with the hot juice, the bottles corked, and the juice processed. When processing is completed, the corks should be tightened and sealed by dipping in hot sealing wax or paraffin.	Pts.—25 Qts.—30 at 180° F.	No. 2—25 No. 3—30 at 180° F.	
	Method II—The fruit should be crushed, the juice strained and allowed to settle for several hours. It should then be drained and the sugar added (1 cup to 1 gal. of juice). The juice should be poured into sterilized bottles, processed, and sealed as in Method I. Use best quality of berries and grapes for this method. Sugar should not be added to juice that is later to be used for jelly making.	Pts.—25 Qts.—30 at 180° F.	No. 2—25 No. 3—30 at 180° F.	

TIMETABLE FOR PROCESSING FRUITS, FRUIT JUICES, TOMATOES, AND PIMIENTOS*—*Continued*

Product	Method of treatment	Hot water, steamer, or pressure cooker (petcock open)		Pressure cooker (5 lbs. pressure) (min.)
		Glass jars pts. & qts. (min.)	Nos. 2 & 3 cans (min.)	
Fruit juices‡ Citrus	The juice should be extracted and heated to 180 degrees F. in open kettles of either aluminum or enamelware. Sugar may be added in the proportion of 1 cup to 1 gal. of juice. While at this temperature the juice should be strained into sterilized bottles or glass jars to overflowing and capped at once to prevent the admission of air. Containers should be submerged in a water bath and held for a sterilization period of thirty minutes at 180 degrees F. The tops of the bottles should be covered with at least ½ inch of water. When using tin the containers should be filled to within ¼ inch of the top, sealed immediately, and processed the required length of time. Lemon and orange juice are better if combined with other juices, since they turn bitter with even the shortest period of sterilization. When citrus fruits are processed in glass jars and carefully wrapped in paper for storage, the product is superior to that processed in containers of pop bottle type. High temperatures in preheating or processing causes bitterness in the canned citrus and a residue in the bottom of the container. If the pulp is removed from the peel and the white membranous skin before the juice is extracted, the product after processing will give no taste of bitterness. However, this takes more time.	30 at 180° F.	30 at 180° F.	
Ripe pimientos	Heat in hot fat or oven to loosen the peel. Peel and pack in small containers. Add ½ teaspoonful salt to each pint and process required time.	Pts.—40	30 (No. 1 & 0)	5
Tomatoes	The tomatoes should be scalded, peeled, and packed into the containers whole or in pieces. Boiling hot tomato juice sufficient to cover the tomatoes and 1 teaspoonful salt should be added to each jar.	45	35	15
Tomato juice	Precooked. Not precooked.	5 20	5 20	3 to 5 10

TIMETABLE SHOWING INCREASED TIME FOR DIFFERENT ALTITUDES IN ARIZONA
WATER-BATH METHOD

Place	Elevation (feet)	Boiling times at given elevations for varying times at sea level				
		5 min.	15 min.	20 min.	25 min.	45 min.
Ajo	1,770	6.77	20.3	26.1	33.8	60.9
Alpine	8,500	13.5	40.5	54.0	67.5	121.5
Ashfork	5,160	10.2	30.5	40.8	51.0	91.8
Benson	3,523	8.5	25.5	34.0	42.5	76.5
Bisbee	5,425	10.4	31.2	41.6	52.0	93.6
Bouse	1,100	6.1	18.3	24.4	30.5	54.9
Bowie	3,756	8.7	26.1	34.8	43.5	78.3
Buckeye	980	6.0	18.0	24.0	30.0	54.0
Camel Back	1,249	6.2	18.6	24.8	31.0	55.8
Canille	5,255	10.3	30.9	41.2	51.5	92.7
Casa Grande	1,400	6.4	19.2	25.6	32.0	57.6
Chandler	1,213	6.2	18.6	24.8	31.0	55.8
Clemenceau	3,460	8.5	25.5	34.0	42.5	76.5
Clifton	3,465	8.5	25.5	34.0	42.5	76.5
Cochise Stronghold	4,950	9.9	29.7	39.6	49.5	89.1
Douglas	3,930	8.9	26.7	35.6	44.5	80.1
Fairbank	3,862	8.86	26.6	35.4	44.3	80.0
Flagstaff	6,907	11.9	35.7	47.6	59.5	107.1
Florence	1,500	6.5	19.5	26.0	32.5	58.5
Ft. Apache	5,300	10.3	30.9	41.2	51.5	92.7
Ft. Defiance	6,950	11.95	35.8	47.8	59.7	107.5
Ganado	6,840	11.8	35.4	47.2	59.0	106.2
Gila Bend	737	5.7	17.1	22.8	28.5	51.3
Globe	3,440	8.4	25.2	33.6	42.0	75.6
Grand Canyon	6,866	11.86	35.6	47.4	59.3	106.7
Holbrook	5,069	10.1	30.3	40.4	50.5	90.9
Jerome	5,250	10.2	30.6	40.8	51.0	91.8
Kingman	3,266	8.3	24.9	33.2	41.5	74.7
Litchfield Park	1,180	6.2	18.6	24.8	31.0	55.8
Maricopa	1,186	6.2	18.6	24.8	31.0	55.8
Marinette	1,150	6.1	18.3	24.4	30.5	54.9
McNary	7,251	12.2	36.6	48.8	61.0	109.8
Mesa	1,245	6.2	18.6	24.8	31.0	55.8
Miami	3,603	8.6	25.8	34.4	43.0	77.4
Mohawk	538	5.4	16.2	21.6	27.0	48.6
Mormon Lake	7,000	12.0	36.0	48.0	60.0	108.0
Nogales	3,839	8.8	26.4	35.2	44.0	79.2
Oracle	4,522	9.5	28.5	38.0	47.5	85.5
Parker	350	5.3	15.9	21.2	26.5	47.7

*U. S. D. A. Bulletin No. 1471.

†University of Maryland Extension Circular No. 55.

‡Prepared by Grace Ryan, Home Demonstration Agent, Maricopa County, Arizona.

Note I—The time given for processing in boiling water applies only to altitudes of 1,000 feet or less. For higher altitudes see table on page 17.

Note II—The zinc of galvanized sheet metal buckets and pans dissolves in fruit juices, rendering them poisonous. Use only glass, agateware, tin-coated, or aluminum utensils (Circular No. 65—California).

TIMETABLE SHOWING INCREASED TIME FOR DIFFERENT ALTITUDES IN ARIZONA

WATER-BATH METHOD—*Continued*

Place	Elevation (feet)	Boiling times at given elevations for varying times at sea level				
		5 min.	15 min.	20 min.	25 min.	45 min.
Payson	4,906	9.9	29.7	39.6	49.5	89.1
Phoenix	1,108	6.1	18.3	24.4	30.5	54.9
Pinedale	6,500	11.5	34.5	46.0	57.5	103.5
Prescott	5,389	10.4	31.2	41.6	52.0	93.6
Quartzsite	871	5.9	17.7	23.6	29.5	53.1
Redrock	1,856	6.9	20.7	27.6	34.5	62.1
Roll	257	5.3	15.9	21.2	26.5	47.7
Roosevelt (Gila)	2,275	7.3	21.9	29.2	36.5	65.7
Rucker Canyon	5,634	10.6	31.8	42.4	53.0	95.4
Sacaton	1,280	6.3	18.9	25.2	31.5	56.7
St. Johns	5,650	10.6	31.8	42.4	53.0	95.4
Salome	1,775	6.8	20.4	27.2	34.0	61.2
Seligman	5,219	10.2	30.6	40.8	51.0	91.8
Snowflake	5,644	10.6	31.8	42.4	53.0	95.4
San Simon	3,609	8.6	25.8	34.4	43.0	77.4
Springerville	6,822	11.8	35.4	47.2	59.0	106.2
Superior	3,000	8.0	24.0	32.0	40.0	72.0
Tempe	1,159	6.2	18.6	24.8	31.0	55.8
Thatcher	2,800	7.8	23.4	31.2	39.0	70.2
Tombstone	4,580	9.6	28.8	38.4	48.0	86.4
Tuba City	4,500	9.5	28.5	38.0	47.5	85.5
Tucson	2,423	7.4	22.2	29.6	37.0	66.6
Vail	3,241	8.2	24.6	32.8	41.0	73.8
Wellton	225	5.2	15.6	20.8	26.0	46.8
Wickenburg	2,072	7.1	21.3	28.4	35.5	63.9
Willcox	4,200	9.2	27.6	36.8	46.0	82.8
Williams	6,750	11.7	35.1	46.8	58.5	105.3
Winslow	4,848	9.8	29.4	39.2	49.0	88.2
Yuma Valley	110	5.1	15.3	20.4	25.5	45.9

Note: For other communities not listed here increase the processing time 20 per cent for every 1,000 feet increase in elevation above sea level.

SCORE CARD FOR FRUIT JUICES

	Per cent
Pack—full	10
Color—clear, natural, not faded	20
Quality of product—uniform consistency throughout	40
Flavor—(when opened) natural, pleasing, unfermented, appetizing	20
Appearance of container—clean, clear container, neatly labeled	10
Total	100

THE CANNING OF NONACID VEGETABLES

STEPS NECESSARY IN CANNING NONACID VEGETABLES

The only safe method for canning nonacid vegetables is the steam pressure cooker method. Other methods are not recommended because they do not reach a sufficiently high temperature to insure destruction of deadly bacteria. Homemakers should not experiment with other methods in canning these products.

If the proper precautions are taken home canning of any product may be considered safe.

1. Only fresh, properly developed vegetables should be selected for canning.
2. Vegetables should not be allowed to stand long after gathering. They should be canned as soon and as quickly as possible after being gathered.
3. All grit and sand should be removed by careful washing.
4. Jars, lids, and rubbers should be thoroughly washed.
5. The tough ends of asparagus should be removed and the tender portions placed in a solution of salt water (1 tsp. salt to 1 qt. water) to draw out the small insects from underneath the scales.
6. If peas are immersed in boiling water for three minutes they will shell more easily.
7. *The hot-pack method is recommended for all nonacid vegetables.* The vegetables should be covered with boiling water and allowed to boil for five minutes or until clear. This precooking shrinks the product and allows a more economical pack.
8. *Important!* Everything should be ready before beginning to precook the vegetables to be canned, then the vegetables should be kept hot after the first heating until processing is completed. They should not be allowed to cool between precooking and processing.
9. The hot jars should be packed with the precooked product using sufficient liquid to insure heat penetration to the center of the jar. If the liquid used in precooking is not sufficient to give a fairly loose pack, boiling water may be used. The liquid should come to the neck of the jar and the top layer of vegetables should be floating. Corn requires a looser pack than other vegetables due to the fact that it swells in processing. (Exception—sweet potatoes or other vegetables eaten dry.)
10. Salt should be added in the proportion of 1 teaspoonful to 1 quart. Two teaspoonfuls of sugar per quart may be added to corn, peas, carrots, tomatoes, and sweet potatoes if desired.
11. Air bubbles may be removed by using a spoon or spatula.
12. When the jar is filled the top of the jar should be wiped carefully; if using rubbers, the rubber bands are placed in position and the lids adjusted according to instructions for that particular type of jar. If using the spring type jar, the lid

should be adjusted and the clamp put in place by leaving the spring up. If using the screw top jar, the lid should be adjusted and the screw turned as tightly as possible, using the thumb and small finger only. If the type of jar with the composition in the lid is used, the lid should be placed on the jar with the sealing composition next to the glass, and the band screwed firmly tight.

13. The packed containers should be processed immediately in the pressure cooker for the desired length of time. (See table on page 21, also table giving changes for altitude on page 24.)
14. After processing glass jars, the pressure gauge should be allowed to reach zero before opening the petcock, then it should be gradually opened so there is no sudden outrush of steam. The seal on glass jars (except the self-sealing type) should be completed. They should be placed in the open air but protected from drafts until cooled.
15. When tin cans are used, the petcock on the pressure cooker should be opened gradually at the end of the processing period and the steam allowed to escape slowly. The tin cans should then be placed in running water to cool.

INSTRUCTIONS FOR THE USE OF THE STEAM PRESSURE COOKER IN CANNING

1. The steam pressure cooker is equipped with a safety valve, petcock, and pressure gauge.
2. Water sufficient to come up at least to the rack should be put in the canner and the lid should be put on loosely.
3. The cooker should be placed on the stove or over the flame and allowed to become hot.
4. Each jar as soon as filled and sealed should be placed in the cooker so that it will be kept hot until ready for processing.
5. When the last jar has been filled and placed in the cooker the lid should be securely fastened by alternately screwing the clamps on opposite sides. Petcock should be left open and safety valve closed.
6. The petcock should be left open seven minutes after the steam begins to escape in a steady stream. This removes all air from the cooker.
7. At the end of the seven minutes the petcock should be closed and the pressure allowed to rise to the desired point for the required temperature. At 10 pounds pressure, the temperature is 240 degrees F. and at 15 pounds the temperature is 250 degrees F. if the pressure cooker is performing perfectly. The pressure should be increased for higher elevations since altitude affects the reading of the pressure gauge. It should be increased ½ pound for each 500 feet of elevation above sea level. (See tables on pages 23 and 24.)
8. The product should be processed for the required length of time after the gauge registers the necessary amount.

TIMETABLE FOR PROCESSING NONACID VEGETABLES WITH THE PRESSURE COOKER*

Product	Method of treatment before processing	Processing period in pressure canner			
		Quart glass jars (min.)	Pint glass jars (min.)	Nos. 2 & 3 tin cans (min.)	Pounds pressure
Asparagus and broccoli	The stalks should be tied in uniform bundles, placed in saucepan with boiling water over lower tough portions, covered tightly, and boiled for four to five minutes. They should then be packed hot into containers and processed. Or the stalks may be cut in half-inch lengths, covered with water, brought to a boil, and packed hot into containers.	35	30	30	10 or 240° F.
Beans (string)	The beans should be covered with water and cooked until the color clears. They should then be packed hot into containers and processed.	35	30	30	10 or 240° F.
Beans (Lima)	Only young tender beans should be canned. The same method as for canning peas may be used.	55	50	50	10 or 240° F.
Baby beets	Only young, tender beets should be canned. They should be scalded in boiling water or steam until the skins slip easily, then skinned and packed hot into containers.	35	30	30	10 or 240° F.
Carrots	The carrots should be cleaned, heated to boiling and packed hot into containers.	35	30	30	10 or 240° F.
Cauliflower	The cauliflower should be cleaned and separated into pieces. It should then be heated to boiling, packed hot into the container and processed.	35	30	30	10 or 240° F.
Corn†	The kernels may be cut off without precooking. Half as much boiling water as corn should be added and then heated to boiling. It should be packed hot into containers and processed. Canned creamed style.	80	75 60 80	70† 50† 70†	10 or 240° F. 15 or 250° F.

TIMETABLE FOR PROCESSING NONACID VEGETABLES WITH THE PRESSURE COOKER*—*Continued*

Product	Method of treatment before processing	Processing period in pressure canner			
		Quart glass jars (min.)	Pint glass jars (min.)	Nos. 2 & 3 tin cans (min.)	Pounds pressure
Greens† including spinach	The greens may be steamed or heated in covered vessel until completely wilted, with just enough water to prevent burning. After wilting they should be packed hot into containers with water enough to cover and processed.	65	60	55†	15 or 250° F.
Okra	Only the young, tender pods should be canned. They should be covered with water, brought to a boil, and packed hot into containers.	40	35	30	10 or 240° F.
Peas (green)	Only the young peas should be canned. They should be covered with water brought to a boil and packed hot into the containers.	55	45	45	10 or 240° F.
Peas (black-eyed)	Same as Lima beans	55	50	50	10 or 240° F.
Peppers (bell)	The stems and seeds should be removed, the peppers heated in boiling water for three to five minutes, and then dipped in cold water. They should be packed into containers with boiling water and ½ teaspoonful salt.	30	25	25	5
Pumpkin and squash	The pumpkin or squash may be steamed or baked until tender then put through a sieve and again heated thoroughly. It should then be packed hot into jars or enamel-lined tin cans and processed.	75	60	No. 2— 60 No. 3— 70	15 or 250° F.
Sweet potatoes	Potatoes may be boiled or steamed until the skins slip off readily. After they are peeled, they should be packed hot into containers and processed.	120	95	No. 2— 95 No. 3—115	10 or 240° F.

*Adapted from Farmers' Bulletin No. 1471—U. S. Dept. of Agriculture; and Oklahoma University Extension Circular No. 260.
†Should not be canned in No. 3 cans because of difficulty of heat penetration.
Note: The different processing periods given in the above table are for sea level. For increase in elevation the gauge pressure should be increased. See the following pages for corrections.

9. Care should be taken to keep the pressure constant during the entire processing time. Fluctuation in pressure causes loss of liquid from jars. Other causes for loss of liquid are: jars filled too full or packed too tightly, and the pressure reduced too rapidly during or at the close of the cooking process.
10. When the processing time is up, if using glass jars, the cooker should be removed from the heat and the pressure allowed to decrease until zero is reached before it is opened.
11. When the gauge has reached zero, the petcock should be opened slowly in order to allow the steam to escape gradually.
12. When all the steam has been released, the cooker should be opened by tilting the upper side of the lid toward the operator in order to avoid burning arms and face with steam.
13. If using tin cans, when the required time is up, open the petcock slowly allowing the steam to escape gradually without waiting for the arrow to return to zero.

SCORE CARD FOR CANNED VEGETABLES

	Per cent
Pack—full, attractive, practical	20
Liquid—clean, clear, up to the top for vegetables (except sweet potatoes and pumpkin)	10
Color—natural color, not faded or unnaturally bright	20
Quality of products—distinct, uniform pieces, well prepared, firm, keeping original shape	40
Appearance of container—clean, suitable container, clear glass, neat label	10
Total	100

In order that the same temperatures may be secured at high elevations as when cooking at sea level, the gauge pressures should be increased by the amounts given in the following table.

THE EFFECT OF ALTITUDE UPON THE GAUGE PRESSURES REQUIRED IN PRESSURE COOKING*

Elevation above sea level (feet)	Corrections to be added to gauge pressure (lbs. per sq. in.)
0	0
1,000	0.5
2,000	1.0
3,000	1.5
4,000	2.0
5,000	2.4
6,000	2.9
7,000	3.3
8,000	3.7

*Computed by H. C. Schwalen—Irrigation Department University of Arizona.

TABLE SHOWING THE CHANGES NECESSARY FOR GAUGE PRESSURES AT DIFFERENT ALTITUDES IN ARIZONA

Place	Elevation (feet)	Pounds necessary for gauge pressure at given elevations	
		10 lbs. pressure	15 lbs. pressure
Ajo	1,770	10.88	15.88
Alpine	8,500	14.25	19.25
Ashfork	5,160	12.6	17.6
Benson	3,523	11.76	16.76
Bisbee	5,425	12.7	17.7
Bouse	1,100	10.55	15.55
Bowie	3,756	11.88	16.88
Buckeye	980	10.49	15.49
Camel Back	1,249	10.62	15.62
Canille	5,255	12.62	17.62
Casa Grande	1,400	10.7	15.7
Chandler	1,213	10.6	15.6
Clemenceau	3,460	11.7	16.7
Clifton	3,465	11.7	16.7
Cochise Stronghold	4,950	12.47	17.47
Douglas	3,930	11.96	16.96
Fairbank	3,862	11.93	16.93
Flagstaff	6,907	13.45	18.45
Florence	1,500	10.75	15.75
Ft. Apache	5,300	12.65	17.65
Ft. Defiance	6,950	13.47	18.47
Ganado	6,840	13.42	18.42
Gila Bend	737	10.37	15.37
Globe	3,440	11.72	16.72
Grand Canyon	6,866	13.43	18.43
Holbrook	5,069	12.53	17.53
Jerome	5,250	12.62	17.62
Kingman	3,266	11.63	16.63
Litchfield Park	1,180	10.59	15.59
Maricopa	1,186	10.59	15.59
Marinette	1,150	10.57	15.57
McNary	7,251	13.62	18.62
Mesa	1,245	10.62	15.62
Miami	3,603	11.80	16.80
Mohawk	538	10.27	15.27
Morman Lake	7,000	13.5	18.5
Nogales	3,839	11.92	16.92
Oracle	4,522	12.26	17.26
Parker	350	10.17	15.17
Payson	4,906	12.45	17.45
Phoenix	1,108	10.55	15.55
Pinedale	6,500	13.25	18.25
Prescott	5,389	12.69	17.69
Quartzsite	871	10.43	15.43
Redrock	1,856	10.93	15.93
Roll	257	10.13	15.13
Roosevelt (Gila)	2,275	11.14	16.14
Rucker Canyon	5,634	12.82	17.82
Sacaton	1,280	10.64	15.64
St. Johns	5,650	12.82	17.82
Salome	1,775	10.89	15.89
Seligman	5,219	12.61	17.61

TABLE SHOWING THE CHANGES NECESSARY FOR GAUGE PRESSURES AT DIFFERENT ALTITUDES IN ARIZONA—*Continued*

Place	Elevation (feet)	Pounds necessary for gauge pressure at given elevations	
		10 lbs. pressure	15 lbs. pressure
Snowflake	5,644	12.82	17.82
San Simon	3,609	11.80	16.80
Springerville	6,822	13.41	18.41
Superior	3,000	11.50	16.50
Tempe	1,159	10.58	15.58
Thatcher	2,800	11.40	16.40
Tombstone	4,580	12.29	17.29
Tuba City	4,500	12.25	17.25
Tucson	2,423	11.21	16.21
Vail	3,241	11.62	16.62
Wellton	225	10.11	15.11
Wickenburg	2,072	11.04	16.04
Willcox	4,200	12.10	17.10
Williams	6,750	13.37	18.37
Winslow	4,848	12.42	17.42
Yuma Valley	110	10.05	15.05

Note: For other communities not listed here, add ½ pound pressure for every 1,000 feet increase in elevation above sea level.

THE CANNING OF MEAT, FISH, AND POULTRY

The canning of meats in the home is an industry that is growing very rapidly. While cured meats will always be desirable on account of their flavors, it is possible to can those portions of a carcass that cannot be readily cured and thus render them ready for immediate use at any time. Any meat can be canned that is fit to eat at the time of canning, and if directions are carefully followed it can be kept indefinitely in the can in an attractive, appetizing, and digestible condition. In view of the fact that several of the organisms that cause spoilage in protein foods are decidedly harmful to humankind, it is essential that the greatest care be used in the entire process of meat canning, and that all meats be processed in a pressure cooker—that is by steam under pressure with a temperature of not less than 240 degrees F.

EQUIPMENT FOR MEAT CANNING

Meats should be canned with a pressure cooker. The temperature required for sterilization (240 to 250 degrees F.) cannot be obtained inside the can or jar by means of any other canning method. The process of canning in a steam pressure cooker is described in Farmers' Bulletin No. 1471, a copy of which may be obtained and used to supplement these directions.

Meat may be canned either in tin cans or in glass jars, and for this purpose any standard glass jar that is perfect will do.

CANNING PRECAUTIONS

1. Only meat from healthy animals should be selected for canning.
2. It should be properly bled and cooled to remove the body heat.
3. The meat should be wiped with a clean, damp cloth and handled in a sanitary manner during the entire time.
4. All surplus fat should be removed to allow for better heat penetration. A small amount, however, should be left on for flavor.
5. The meat should be cut into pieces that will pack conveniently into the container. It should not be rolled in flour before canning.
6. It should be precooked by boiling, steaming, searing in oven or frying pan until heated all through and juice runs yellow instead of red. This shrinks the meat and insures a more economical pack. Meat may be packed raw and then processed but the shrinkage that takes place during processing results in only a partially filled can as the finished product.
7. *Important!* Everything should be ready before beginning to precook the meat to be canned no matter what kind of meat it is; the meat should be kept hot after the first heating until processing is completed. It should not be allowed to cool between precooking and processing.
8. When the meat is packed into the jar, broth should be poured in to fill the jar about one fourth to one third full, or water may be put into the fat remaining in the skillet or pan and allowed to boil up and then used instead of broth.
9. Meat may also be packed dry, that is without broth or gravy. Meat that has been precooked by dry heat (broiling, frying, baking) may be packed in this manner, but meat that has been precooked by boiling and steaming should be covered with liquid, either gravy or broth.
10. Directions in the recipes should be followed exactly in order to be sure that the finished product will be safe as well as palatable. The time and the temperature should be carefully watched.
11. In processing meat, it is necessary to use from 10 to 15 pounds pressure in order to reach 240 to 250 degrees F., but when only 10 pounds pressure is used it requires a correspondingly longer period of time for the processing. However, many people prefer to use this method as the product is apt to retain its color better at the lower temperature.
12. In processing meats be sure to consult the timetable given on page 35.

RECIPES FOR CANNING MEATS

Swiss Steak

Beef round, salt, pepper, tomato sauce. The round should be cut into steaks at least 2 inches thick, then divided into pieces of a

size that will just about fit a jar or tin C-enamel can. The steaks should be seared brown, packed hot into the can, and covered with a boiling hot tomato sauce.[2]

Tomato Sauce for Swiss Steak

One onion, 2 tablespoons butter, 1 quart canned tomatoes, one bay leaf, six cloves, parsley, salt to taste. The onion should be cooked until yellow and soft in the butter. The rest of the ingredients should be added and the mixture cooked until reduced to half. It should then be strained, poured hot over the seared meat, processed, and sealed. The timetable gives the required processing time.[3]

Roast Beef

The loin, rump, and the round should be cut into pieces just a trifle larger than will go into the container. These pieces should be kept as nearly whole as possible. There is no objection to the presence of some little bone. Three or four metal skewers may be inserted into roasts or clean cord may be wrapped around roasts and tied securely. Lard should be heated in a large kettle until hot, then the meat seared to a golden brown and the skewers or cords removed. It should then be packed hot into the cans (C-enamel or glass jars), a teaspoonful of salt added, processed, and sealed. (Timetable gives correct processing time.)

Hamburger

Five pounds ground beef, 3 tablespoons salt, one half small red pepper chopped fine, one half onion chopped fine. All ingredients should be combined, mixed thoroughly, and shaped into smooth cakes 1 inch thick and a little larger in diameter than the cans. The cakes may then be laid on a slightly greased, flat pan and placed in an oven to sear until slightly browned on both sides. A pancake lifter may be used for turning the cakes. When seared the cakes should just fit into the cans snugly. Boiling water may be poured into the pan and then poured hot over the meat in the jar. The containers should be processed the correct length of time (see table) and sealed at once.

Chili con Carne con Frijoles

Fifteen pounds beef from shoulder cut into small cubes or ground coarsely (chicken, pork, veal, or mutton may be used); 1¾ quarts lard or suet, 2½ teaspoons paprika, twenty dried sweet peppers, 3¾ quarts kidney beans, 2 quarts tomato puree, 3 quarts water, salt to taste. The meat should be browned lightly in the hot fat, the paprika, peppers, tomato, water added, and then cooked for fifteen minutes. The beans, soaked in cold water overnight, should be cooked for half an hour, drained, and combined with

[2] From National School of Pressure Cooking.

[3] *Idem.*

the meat mixture. The salt should be added and the mixture packed boiling hot into the cans and processed.[4]

Meat Loaf

Fifteen pounds fresh ground beef, 7 pounds ground veal or lean pork, 1 pound suet, 3 pound-loaves stale bread, broken into small pieces, 5 tablespoons salt, twenty eggs, celery salt to taste, 2 cups tomato paste or catsup. The meat with suet should be run through a sausage grinder and then combined with the salt, well beaten eggs, seasonings, tomato, and bread crumbs (soaked in cold water and squeezed dry). The ingredients should be mixed well and formed into smooth even-sized loaves, shaped as nearly like the cylindrical cans as possible and a trifle larger. The surface of the loaves should be free from flour. Three or four skewers may be inserted in each and the loaves placed in a moderate oven (375 degrees F.) on a flat pan. After the loaves have been seared on all sides to a light brown, they should be turned over with a pancake turner. The searing requires twenty or twenty-five minutes. The skewers should then be removed, the loaves slipped into the cans, and 4 or 5 tablespoons of liquid from the searing pan added. The containers should be sealed at once and processed. Yield—eleven loaves.[5]

Boiled Tongue

The tongue should be cleaned, salted, and lightly smoked. If desired it may be cleaned thoroughly, rubbed heavily with salt, and left standing with salt sprinkled over it for eight to ten hours. It should be boiled until done, skinned, and packed hot into cans with a little of the liquid in which it was boiled (thinned with some boiling water to reduce the saltiness). The containers should be sealed immediately and processed according to the timetable.[6]

Roast Pork

The same seasoning may be used as for beef. If ham is used and skin is left on, the skin may be cut through with the point of a knife so as to dice the skin. If desired, cloves and little tufts of parsley may be used for trimming. Two small turnips may be added to the roasting pan. The skin side should be left up, without turning, until the skin is nicely browned and the juice runs yellow. It should be basted frequently. When removed from the oven, the pork should be cut up, packed hot into jars, boiling hot liquid added, and processed the required length of time.[7]

Roast Ham

If skin and fat are removed before roasting, the ham may be

[4] *Idem.*

[5] *Idem.*

[6] From the *Modern Way of Canning and Cooking,* Burpee Can Sealer Co.

[7] *Idem.*

covered with narrow strips of larding pork, alternating with rows of little tufts of parsley. One small turnip, one small root of celeriac, a few cloves, five or six whole peppercorns may be added to the roasting pan. Meat may be rubbed with clove of garlic if desired. Seasoning should be added, and the meat basted frequently and cooked until the juice runs yellow. When removed from the oven, the ham should be cut up, packed into jars, boiling hot pan gravy added, and processed as per timetable.[8]

Chops—Pork, Mutton, or Lamb

The bones should be removed from the chops and the meat seasoned and seared on both sides in hot grease. The chops should then be packed into cans and brown gravy (made by putting water in the pan grease) added. The containers should be sealed hot and processed according to the time given in the table.[9]

Fried Brains

Brains are considered a great delicacy by epicures. They should be soaked first in several changes of cold water to draw out the blood and remove the membranes. They should be fried in hot grease, sprinkled with salt and pepper, packed into the containers, and the pan gravy added to cover. The containers should then be sealed and processed as per timetable.[10]

Beefsteak

The sirloin of beef or other steak is skinned and cut into suitable pieces of steak. Some grease should be heated in a frying pan, then the sliced steak should be put into the hot grease and quickly seared on both sides. It should then be sprinkled with salt and pepper to suit taste and nicely browned, then packed into plain or C-enamel cans. If desired, sliced onions nicely browned or small boiled and browned Irish potatoes may be packed with the meat. The cans may be filled with hot gravy made from the pan grease with water added, then sealed and processed as per timetable.[11]

Canned Sausage

Eight pounds ground pork (6 pounds lean, 2 pounds fat), 8 teaspoons salt, 1 teaspoon pepper, sage (if desired). The sausage should be made into cakes, precooked in fat until brown, packed and processed as per timetable.

Corned Beef

Curing: The pieces commonly used for corning are the plate, rump, cross ribs, and brisket, or in other words, the cheaper cuts

[8] *Idem.*
[9] *Idem.*
[10] *Idem.*
[11] *Idem.*

of meat. The pieces for corning should be cut into convenient-sized joints about 5 or 6 inches square. It should be the aim to cut them all about the same thickness so that they will make an even layer in the barrel.

Meat from fat animals makes choicer corned beef than that from poor animals. When the meat is thoroughly cooled, it should be corned as soon as possible, as any decay in the meat is likely to spoil the brine during the corning process. Under no circumstances should the meat be brined while it is frozen. The meat is weighed out (with 8 pounds of salt allowed to each 100 pounds) and a layer of salt sprinkled ¼ inch in depth over the bottom of the barrel. The cuts of meat should be packed in as closely as possible, making a layer of 5 to 6 inches in thickness; then a layer of salt should be put on and another layer of meat. The process should be repeated until the meat and salt have all been packed in the barrel, care being taken to reserve salt enough for a good layer over the top. After the package has stood overnight, 4 pounds of sugar, 2 ounces of baking soda, and 4 ounces of saltpeter dissolved in a gallon of tepid water should be added for every 100 pounds of meat. Three gallons more of water should be sufficient to cover this quantity. In case more or less than 100 pounds of meat are to be corned, the brine should be made in the proportions given. A loose board cover, weighted down with a heavy stone or piece of iron, should be put on the meat to keep all of it under the brine.

It is not necessary to boil the brine except in warm weather. If the meat has been corned during the winter and must be kept into the summer season, it would be well to watch the brine closely during the spring, as it is more likely to spoil at that time than at any other season. If the brine appears to be ropy or does not drip freely from the fingers, it should be turned off and new brine added after carefully washing the meat. The sugar or molasses in the brine has a tendency to ferment, and unless the brine is kept in a cool place, there is sometimes trouble from this source. The meat should be kept in the brine twenty-eight to forty days to secure thorough corning.

Canning: When ready to can, the meat should be placed in a kettle and covered with cold water. It should be brought slowly to a boil and simmered for one hour after which the meat should be removed and cut in pieces that will fit the can. The soup or liquid in which the meat was boiled should be returned to the fire and seasoned with bay leaves, cloves, and nutmeg to taste. The meat should be packed into plain cans and covered with the hot, seasoned soup to which some gelatin (1 tablespoon per quart of broth) dissolved in cold water has been added. The containers should be sealed and processed as per timetable.[12]

Mince Meat

Twelve pounds boiled beef, 6 pounds beef suet, 25 pounds good flavored apples chopped, 12 pounds seedless raisins, 8 pounds

[12] *Idem.*

currants, 4 pounds citron chopped fine, 4 ounces cinnamon, 1 ounce cloves, four nutmegs grated, 12 pounds brown sugar, 1 gallon cider, grape juice, or orange juice, 1 quart honey or molasses, salt to taste. The ingredients should be mixed together, heated to the boiling point, and cooked slowly for half an hour. The mince meat should then be packed hot into cans (within ½ inch of the top) and processed the required length of time.[13]

Pork Tenderloin

Many housewives prefer to can the tenderloin separately. The tenderloin should be cleaned with a damp cloth and seared quickly in hot grease, then seasoned according to taste, and roasted until nicely browned. It should be cut into can lengths and packed into cans. A hot gravy stock may be poured over it (prepared from pan grease with soup stock or hot water added) to within ¼ inch of top of can. The containers should be sealed and processed as per timetable.[14]

Tamales

Five pounds pork (shoulder is excellent but scraps will do nicely), 5 pounds beef (use cheaper cuts), 1½ pounds lard, 1 pound suet, 1½ pounds dry chili (Anaheim bulk or package chili not ground), one bundle corn husks, 7 pounds shelled corn, or 10 pounds prepared masa, 1 cup lime.

Preparation of Meat: The beef and pork should be boiled together until tender, then the liquid should be reduced until only 4 quarts remain. The meat and liquid should be allowed to cool before cutting the meat into pieces about 1 inch in length and across the grain. One half cup of flour should be sifted over this meat and salt added if meat was not salted in cooking. The chili should be prepared by cutting off the tops, shaking out the seeds, and letting soak two hours in boiling water. If tamales are to be extra hot, five or six small hot peppers may be added. After the chili has been soaked it should be ground, using the finest blade of the grinder, and added to the meat.

Preparation of Masa or Dough: This can be bought but if it is to be prepared, a large variety of field corn with perfect grains should be selected. Seven pounds (4 quarts) of corn should be boiled with 1 cup of lime for about twenty minutes or until the husks can be washed off. After boiling, the corn should be washed through five or six waters or until the husks are well removed, then ground to the consistency of meal. This dough is known as masa. This must be made fresh each day or kept cold. The lard should be placed in a large pan such as a pressure cooker or dishpan and creamed with the hands as for cake. Two tablespoons of salt and the rendered suet, just warm enough to mix, should be added to the lard. The masa and 2 quarts of warm broth from the meat

[13] From National School of Pressure Cooking.

[14] From the *Modern Way of Canning and Cooking*, Burpee Can Sealer Co.

should then be added and the mixture creamed with the hands to a creamy consistency or until a teaspoonful of the mixture floats when placed in a cup of water. It takes about one half hour of mixing for the dough to reach this stage.

Preparation of Corn Shucks: The shucks should be placed in a large pan without separating, covered with boiling water, and allowed to stand for about ten minutes or until pliable. They should then be washed, the silks removed as the shucks are separated and stacked so as to keep damp.

Making Tamales: The damp (but not wet) shuck should be placed on the palm of the hand, 1 large tablespoon of the dough should be spread on the shuck (spread like a pancake) and 1 large tablespoon of the meat mixture added. It should then be rolled or folded into a flat roll 2 inches wide with the top of the shuck folded over about one half of the length. As soon as each tamale is made, it should be placed in a pan such as a roaster that has been lined with shucks and to which 1 teaspoon of salt and ½ to 1 cup of water has been added. (The water prevents the shucks from burning.) The tamales may be stacked if room is left for the circulation of steam. When the roaster is full, a cloth (sugar sack) wrung out of cold water should be laid over the tamales. This is important as this steams the tamales and they will not be dry. A tight lid should then be placed on the roaster and the tamales cooked from thirty minutes to an hour, depending on the number of tamales in the steamer. Before removing the tamales from the oven, one should be examined to see if the dough is thoroughly cooked. Time for cooking should not be counted until steam is coming from the roaster.

This recipe may be varied by frying instead of boiling the meat, by adding garlic or onions, by using commercial chili powder and other spices, by using cornmeal for the dough, and by using other vegetables such as beans or peas in the meat mixture. Tamales may be cooked in the pressure cooker but are not so moist.

This recipe makes one hundred of the large-size tamales.

Canned Tamales: The tamales should be steamed until done, then packed hot into tin cans or glass jars, sealed, and processed in the pressure cooker one hour at 15 pounds pressure (250 degrees F.). When ready to serve they should be heated in the cans. (Recipe by Mrs. Sam King, Cochise County, Arizona—originator unknown.)

CANNING OF FISH

1. Fish for canning should be fresh. They should be bled and dressed as soon after being caught as possible. If dipped in boiling water, the scales are more easily removed.
2. Quick work is essential in canning fish in order to prevent deterioration in quality and possible spoilage.
3. The fish may be placed in a salt solution (1 tablespoon to 1 quart of water) for ten minutes to an hour (depending on

size) to draw out the blood. This step is not absolutely necessary but it does insure a firmer, whiter finished product.
4. The salt solution should be rinsed off with clear water and the fish cut into convenient sized pieces for canning.
5. Fish to be canned should not be rolled in flour or cornmeal before browning.
6. Fish may be packed either raw or precooked. The precooked method is preferred as the fish packed raw shrink during processing, leaving a partially filled jar. The fish may be precooked either by frying, baking, or steaming.
7. No salt is necessary if the fish have been soaked in salt solution, but if not then ½ teaspoonful should be added per pint of fish.
8. *Important!* Everything should be ready before beginning to precook the fish to be canned no matter what kind of fish it is, then the fish should be kept hot after the first heating until processing is completed. It should not be allowed to cool between precooking and processing.
9. Quart jars are not recommended for canning fish. Only the pint jars or No. 2 tin cans should be used.
10. The pressure cooker method is the only safe method of canning fish.
11. In canning fish whether fried, baked, or steamed, never add liquid.
12. The same directions as for processing meat should be followed. Pint jars should be processed for one hundred minutes at 10 pounds pressure and No. 2 cans ninety minutes at 10 pounds pressure.

RECIPES FOR CANNING FISH

Canned Fried Fish

The fish should be cleaned and dressed as for the table. If the fish is large, it should be split along the back and the backbone removed, but for smaller fish this is not necessary. The fish should be placed in a salt solution and allowed to remain from ten minutes to an hour according to the thickness of the meat. It should then be drained, washed, dried, and cut into convenient sized pieces for packing. It should be fried in fat until nicely browned, drained well, and placed on a brown paper to remove excess fat. Then it should be packed hot without liquid into clean containers and processed as per timetable.[15]

Canned Steamed Fish

The above procedure should be used for preparing the fish. Instead of precooking in hot fat it may be placed in the upper part of a steamer and steamed until about half done, then packed hot without liquid into clean containers, and processed as per timetable.

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[15] From the *Ball Blue Book.*

Canned Baked Fish

The fish should be prepared as described above. It may either be baked whole or cut into pieces and then baked. It should be placed on a rack in a broiling pan, baked until about half done, packed hot into clean containers, and processed as per timetable.

CANNING OF POULTRY AND RABBIT

1. Fowls that are fairly fat and in good condition should be selected for canning.
2. All poultry should be killed long enough before canning to allow the heat to leave the body.
3. If the birds are killed by cutting the throat with a sharp knife better bleeding is insured, particularly if the heads are hung downward.
4. The poultry should be picked, singed, washed, and dressed as for the table.
5. The pressure cooker method is the only method recommended as safe for canning chicken.
6. *Important!* Everything should be ready before beginning to precook the chicken to be canned, then the chicken should be kept hot after the first heating until processing is completed. It should not be allowed to cool between precooking and processing.
7. Chicken that has been precooked by dry heat (frying, baking) may be packed without broth or gravy, but chicken that has been precooked by boiling and steaming should be packed with liquid. The broth or gravy should fill the jar about one fourth to one third full.
8. The giblets should be packed separately from the other parts of the fowl because of their strong flavor. Liver should not be included because it is apt to give a bitter taste to the product.
9. Chicken for canning should not be rolled in flour.

The following recipes may be used:

Chicken (Plain)

The fowl may be dressed as for immediate use (skinning feet and boiling these with neck and bony pieces). The meaty pieces may be simmered until about half done, then packed hot into containers and the hot broth added to within ½ inch of top of container. The containers should be sealed and processed the required length of time.

Fried Chicken

The chicken should be dressed, cut up, and fried in hot fat until half done or until blood runs yellow. It should not be rolled in flour or meal. The feet, neck, and bony pieces may be boiled, canned, and processed for soup. The hot fried chicken should be packed into jars, sealed, and processed the required length of time.

Roast Fowl

The fowl should be dressed, seasoned, and roasted until blood runs yellow or until about half done. It should then be cut into pieces, packed into jars or cans while hot, and the liquor from the roasting pan poured over it until jars are one third full. The containers should be sealed and processed as per timetable.

Rabbit

The freshly killed rabbit should be skinned, dressed, washed in salt water, and dried. It should then be cut into pieces and fried until nicely browned but not entirely tender. It may be packed into containers dry, preheated for five to eight minutes, sealed, and processed. Some people prefer to cover the meat with gravy made from the pan grease, using this as a base for cream gravy to pour over the meat when serving.[16]

CANNING MEATS, FISH, AND POULTRY FOR EXHIBITS

The following suggestions, if followed, should help to insure a more attractive product:

1. Fried meat or fish should not be rolled in flour or corn meal. It not only hides the texture of the meats but flakes off making an unattractive pack.
2. Quantities of cold fat on canned meats are unattractive. Just enough to give flavor should be left on for canning.

TIMETABLE FOR PROCESSING MEATS, FISH, AND POULTRY WITH THE PRESSURE COOKER

Product	Processing period in pressure cooker*				
	Quarts (min.)	Pints (min.)	Nos. 2 & 3 cans (min.)	Type of tin can	Pounds pressure
Swiss steak	120	85	No. 2— 85 No. 3—120	Plain or C-enamel	15 or 250° F.
Roast beef	120	85	No. 2— 85 No. 3—120	Plain or C-enamel	15 or 250° F.
Hamburger	120	85	No. 2— 85 No. 3—120	Plain or C-enamel	15 or 250° F.
Chile con carne	120	85	No. 2— 85 No. 3—120	Plain or C-enamel	15 or 250° F.
Meat loaf	120	85	No. 2— 85 No. 3—120	Plain or C-enamel	15 or 250° F.
Boiled tongue	120	85	No. 2— 85 No. 3—120	Plain or C-enamel	15 or 250° F.

[16] From the *Modern Way of Canning and Cooking*. Burpee Can Sealer Co.

TIMETABLE FOR PROCESSING MEATS, FISH, AND POULTRY WITH THE PRESSURE COOKER.—*Continued.*

Product	Processing period in pressure cooker*				
	Quarts (min.)	Pints (min.)	Nos. 2 & 3 cans (min.)	Type of tin can	Pounds pressure
Roast pork	120	85	No. 2— 85 No. 3—120	Plain or C-enamel	15 or 250° F.
Roast ham	120	85	No. 2— 85 No. 3—120	Plain or C-enamel	15 or 250° F.
Chops—pork, mutton, or lamb	120	85	No. 2— 85 No. 3—120	Plain or C-enamel	15 or 250° F.
Fried brains	120	85	No. 2— 85 No. 3—120	Plain or C-enamel	15 or 250° F.
Beefsteak	120	85	No. 2— 85 No. 3—120	Plain or C-enamel	15 or 250° F.
Sausage	120	85	No. 2— 85 No. 3—120	Plain or C-enamel	15 or 250° F.
Corned beef	120	85	No. 2— 85 No. 3—120	Plain or C-enamel	15 or 250° F.
Mince meat	120	85	No. 2— 85 No. 3—120	Plain or C-enamel	15 or 250° F.
Pork tenderloin	120	85	No. 2— 85 No. 3—120	Plain or C-enamel	15 or 250° F.
Fish† (with some bones)		100	No. 2— 90	Plain or C-enamel	10 or 240° F.
Chicken (with bone)	75	65	No 2— 55 No. 3— 70	Plain or C-enamel	15 or 250° F.
Chicken (without bone)	120	85	No. 2— 85 No. 3—120	Plain or C-enamel	15 or 250° F.
Rabbit	75	65	No. 2— 55 No. 3— 70	Plain or C-enamel	15 or 250° F.
Cream‡		20	20	Plain or C or R-enamel	12½ or 245° F.
Tamales§	60	60	60	Plain or C-enamel	15 or 250° F.

*Processing time—U. S. Department of Agriculture, Bureau of Home Economics.

†Quart jars and No. 3 cans are not recommended (Department of Commerce, Bureau of Fisheries).

‡By Prof. R. N. Davis—Dairy Department, University of Arizona.

§By Bertha J. Virmond, Home Demonstration Agent, Cochise County, Arizona.

SCORE CARD FOR CANNED MEAT

	Per cent
Pack—full, attractive, practical	20
Liquid—if any, clean, clear, jellied	10
Color—natural, characteristic of the product	20
Quality of product—distinct, uniform portions, well prepared, keeping original shape	40
Appearance of container—clean, suitable container, clear glass, neat label	10
Total	100

CANNING CREAM[17]

1. Only fresh sweet cream should be used for canning.
2. It should be packed in airtight containers, such as plain tin cans, lacquered tins, or glass jars.
3. It should be sterilized at 118 degrees C. (245 degrees F.) for 20 minutes. Fifteen minutes should be allowed for bringing the temperature up to 245 degrees and fifteen minutes for cooking, that is, do not open petcock on pressure cooker until the pressure has gone down.
4. The containers should be shaken occasionally while cooling to prevent the fat from oiling off and solidifying as solid cake. (Milk fat melts at about 92 degrees F. and starts to solidify at about 75 degrees F.) Care should be taken not to shake the containers too much as there is danger of churning.

TESTS FOR SPOILAGE

Canned products, particularly meats and vegetables, should be carefully tested for spoilage before they are served. The following examinations should be made.

1. Containers—
   a. Tin—Both ends should be perfectly flat. Many times the ends bulge after processing. If they do not go back into place of their own accord they should be pressed down before being stored. Bulged ends may or may not indicate the presence of gas.
   b. Glass—The top of the lid should be flat and the seal perfect.
2. Contents—Usually cloudy liquid, moldy, soft food, peculiar odor, and gas are all signs of spoilage. The odor may not be noticeable until the food is heated. For this reason the product should be examined when hot as well as when cold.

Important! Nonacid vegetables and meats are more desirable for consumption if they are boiled in the jar for ten minutes before opening. This is done for a double purpose—to render the food safer and to cause the contents of the jar to reabsorb the flavors that would escape into the air if the product were opened cold.

[17] By Prof. R. N. Davis, Dairy Department, University of Arizona.

Food showing signs of spoilage should be carefully disposed of by boiling for thirty minutes with lye (1 tablespoon of lye to 1 quart food) or burning.

DRYING OR DEHYDRATION OF FRUITS, VEGETABLES, AND MEATS

The drying or dehydration of fruits, vegetables, and meats has been a recognized method of food preservation for many years. While probably not so popular a method of preservation as canning it nevertheless has the advantage of being a more economical one from the standpoint of saving money and space. Particularly is this true in regions where climatic conditions make possible the sun-drying of food products.

EQUIPMENT

Home drying equipment may be made with very little expense and may be used from year to year.

For sun-drying, the very simplest equipment (trays and cheesecloth) is required. These trays may be constructed of wood or wire screening.

For artificial drying, the equipment may range from the inexpensively constructed hydrators used on cook stoves to the larger ones constructed out-of-doors.

Ovens are frequently used for partial or complete dehydration with very good success. Care must be taken with this method to keep the temperature low and constant during the entire process.

PREPARATION OF FRUITS FOR DRYING

Fruits for drying should be in prime condition. Only the best and freshest of fruits should be used for this purpose, and for the best results they should be quickly handled and dried.

The fruit should be washed, peeled, and either cut into slices or halved. The thinner the slices the better for drying.

If immersed in a salt solution (6 level tablespoons salt to 1 gallon of water) the fruit will retain its natural color.

If the fruits are to be sun-dried, the process is hastened somewhat by steaming (blanching) or by drying in the oven for the first hour.

DIRECTIONS FOR DRYING SPECIAL FRUITS

Apples

Mature fruit in good condition should be selected. Good cooking varieties are best for drying purposes. They should be washed, peeled, cored, and sliced as quickly as possible and dipped into a salt solution. The sun, the oven, or a dehydrator may be used for drying. Test for dryness: the fruit should feel elastic when gripped firmly in the hand and should show no trace of moisture.

Apricots and Peaches

Fruit intended for drying should be ripe but free from bruises and soft spots. All varieties may be dried but peaches with yellow meat make the most attractive product. Apricots should not be peeled, but peaches may or may not be peeled as the operator desires. They should be stoned and placed in a salt solution for about ten minutes, then dried until no moisture appears when pressed firmly in the hand.

Dates

Home curing of fresh dates in Arizona has been accomplished successfully and with very little expense for several years. The dates may be spread on trays or papers and placed in the sun until thoroughly cured, or dried in the oven. If the oven method is used care must be taken not to overheat the dates. A more satisfactory method and one that is commonly used in Arizona is with the sun date heater. Home owners of date palms who are interested in this heater should write to the University of Arizona for *The Home Curing of Fresh Dates in Arizona* (Extension Circular No. 79, Revised) by Hilgeman and Albert.

Figs

For drying purposes, figs should be well-ripened but not overripe or soft. The ripened fruit should be dipped in a boiling lye bath (1 pound of concentrated lye in 10 gallons of water) for one minute to remove the waxlike coating. The lye should be removed by thoroughly washing the figs several times in clear water. They should be spread on trays and completely dried by any of the recommended methods.

Grapes (Thompson Seedless)

For drying purposes, only the ripest grapes should be selected. They should be pinkish yellow in color with some of the grapes on the bunch already starting to dry. At this stage the sugar content is the highest which insures a desirable finished product. The bunches should be washed and all imperfect ones removed. They should then be spread evenly over wire trays, covered with a thin cloth, and placed in the shade to dry. In early morning and late afternoon they may be placed directly in the sun but during the middle of the day the shade is best as the intense rays of the sun tend to burn and toughen them. For best results grapes should not be left out during a rain or on dewy nights.

Pears

Only the fine-grained varieties that are high in sugar content should be selected for drying. The Bartlett is recommended as probably the most desirable for this purpose. They should be prepared and dried in the same manner as apples. When completely dried, they should be elastic and free from moisture.

DIRECTIONS FOR DRYING VEGETABLES

1. Only the fully developed fresh vegetables should be selected for drying.
2. After the preliminary steps of cleaning and cutting, the vegetables should be precooked. This sets the juices and the color and shortens the drying period.

It is possible to dry almost any vegetable, however, some are more satisfactorily dried than others. Beans, beets, cabbage, carrots, celery, corn, parsnips, peas, potatoes, pumpkin, onions, tomatoes, turnips, and squash have all been successfully dried. *Farm and Home Drying of Fruits and Vegetables* (U. S. Department of Agriculture, Farmers Bulletin No. 984) gives complete directions for this work.

Beans (String)

Beans for drying should be fully matured but still green and crisp. The pods should be cut in 1-inch lengths and then boiled in salt water (2 tablespoons salt to 1 gallon water) for ten minutes. They should then be drained, spread on trays, and dried in the sun, oven, or hydrator until dry and brittle.[18]

Peas

Peas for drying should be fully developed but with the pods still green and tender. After shelling, the peas should be boiled for two minutes in salt water (2 tablespoons to 1 gallon of water), drained, and spread evenly on trays for drying. They may be dried by any of the home methods until uniformly dry and brittle.[19]

Sweet Corn

Corn for drying should be gathered while in the milk stage. It should be prepared for drying as soon as gathered in order to prevent deterioration in quality. After husking and trimming, the ears should be immersed in boiling water for eight to twelve minutes in order to set the milk. When cool enough to handle, the corn should be cut from the cobs and spread out on trays to a depth of ½ to ¾ inch. It may be dried by any home method until the kernels are hard and semitransparent.[20]

Spinach

The spinach should be steamed over water one to three minutes, then drained and spread on trays covered with cheesecloth. It may be dried in the sun, oven, or hydrator until dry and brittle.

[18] Adapted from U. S. D. A. Farmers' Bulletin No. 984.
[19] *Idem.*
[20] *Idem.*

DIRECTIONS FOR DRYING MEATS

Jerky

The beef should be cut into strips 2 or 3 inches wide, then dipped into a boiling brine for two or three minutes. It should then be hung over the clothes line and held in place with clothes pins, if a wind is blowing. The length of time necessary for curing depends on the amount of moisture, the sun, and wind. Two or three days should be sufficient for the actual drying process, then for several more days the shriveled pieces of meat should be placed in a sugar sack to complete the process. The important thing is to see that the meat is thoroughly dried before storing. It is usually eaten without cooking but it can be prepared by pounding with the hammer or grinding and made into jerky gravy or stew. Jerky should be stored in a place high enough so that flies cannot reach it. Some people use the top of the windmill for this purpose, others make a smudge under the meat. The ideal place, however, is a screened porch. (By Bertha J. Virmond, Home Demonstration Agent, Cochise County.)

STORAGE OF DRIED FRUITS AND VEGETABLES

Fruits and vegetables dried in the sun should be subjected to a high temperature (165 degrees F.) afterward as a final preparation for storing. This is for the purpose of killing all organisms and to insure a perfectly dried product. This may be done in the oven.

Dried food products should be stored immediately after drying in containers that are dust and insect proof. Cardboard ice cream cartons, airtight tins, heavy waxed cardboard boxes, and bags may be used for storage. Boxes may be made airtight by pouring melted paraffin over the cracks.

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